

WHAT IS CLAIMED IS:

89  
9147

1 1. An implantable prosthesis, comprising:  
2 a body structure having an outer surface capable of contacting a surface of  
3 a vascular lumen;  
4 a plurality of grooves defined on said outer surface of said body structure;  
5 and  
6 filament portions containing a therapeutic substance disposed in said  
7 plurality of grooves.

1 2. The implantable prosthesis of Claim 1, wherein each of said  
2 plurality of grooves has a preselected and controlled distribution and a preselected  
3 and controlled depth.

1 3. The implantable prosthesis of Claim 2, wherein said preselected and  
2 controlled depth is equal to about 10% to 90% of a thickness of said body  
3 structure.

1 4. The implantable prosthesis of Claim 2, wherein said preselected and  
2 controlled depth is not greater than about 65% of a thickness of said body  
3 structure.

1           5.       The implantable prosthesis of Claim 1, wherein each of said  
2   plurality of grooves are open ended.

1           6.       The implantable prosthesis of Claim 1, wherein said plurality of  
2   grooves are formed by exposing said outer surface to an energy discharge from a  
3   laser.

1           7.       The implantable prosthesis of Claim 1, wherein each of said  
2   plurality of grooves are formed in rows extending approximately perpendicular to a  
3   central longitudinal axis of said body structure.

1           8.       The implantable prosthesis of Claim 1, wherein each of said  
2   filament portions comprise a polymer material.

1           9.       The implantable prosthesis of Claim 1, wherein said therapeutic  
2   substance comprises a substance selected from the group consisting of  
3   antineoplastic, antiplatelet, anticoagulant, fibrinolytics, antimitotic, thrombin  
4   inhibitor, antiinflammatory, and antiproliferative agents.

1           10.      The implantable prosthesis of Claim 1, wherein said therapeutic  
2   substance comprises a radioactive isotope.

1           11.      The implantable prosthesis of Claim 1, further comprising a barrier  
2   formed on said outer surface of said body structure, wherein said barrier covers

- 3 each of said plurality of grooves to reduce the rate at which said therapeutic  
4 substance is released.

1 12. An implantable prosthesis, comprising:  
2 a body structure having an outer surface capable of contacting a surface of  
3 a vascular lumen;  
4 a plurality of grooves defined on said outer surface; and  
5 a polymeric substance containing a therapeutic substance disposed in said  
6 plurality of grooves.

1 13. A method of loading a substance into a body of an implantable  
2 prosthesis, comprising:  
3 providing a body structure having an outer surface capable of contacting a  
4 vascular lumen surface;  
5 forming grooves on said outer surface of said body structure; and  
6 positioning a monofilament including a therapeutic substance in said  
7 grooves.

1 14. The method according to Claim 13, wherein said positioning  
2 comprises winding a monofilament around said body structure to rest in said  
3 grooves.

1           15.    The method according to Claim 14, further comprising removing  
2 portions of said monofilament extending outside of said grooves.

1           16.    The method according to Claim 13, further comprising forming a  
2 barrier on said lumen contacting surface of said body structure for releasing said  
3 therapeutic substance at a controlled rate.

1           17.    The method according to Claim 13, wherein said grooves comprise  
2 open ended trenches extending substantially perpendicular to a central axis of said  
3 body structure.

1           18.    The method according to Claim 13, wherein said therapeutic  
2 substance comprises a substance selected from the group consisting of  
3 antineoplastic, antiplatelet, anticoagulant, fibrinolytics, antimitotic, thrombin  
4 inhibitor, anti-inflammatory, and antiproliferative substances.

1           19.    The method according to Claim 13, wherein said monofilament  
2 comprises a polymer material including polyurethane blended with 10%-30%  
3 dexamethasone.

1           20.    An implantable prosthesis, comprising:  
2 a body structure having an outer surface capable of contacting a surface of  
3 a vascular lumen;  
4 a plurality of open-ended trenches defined on said outer surface; and

microfila  
hes.

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Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	